REMARKS

In reply to the Office Action of November 15, 2004, Applicants submit the following remarks. Claims 1-6, 8 and 11-13 have been amended. Claims 1 and 8 have been amended to clarify that the polymer or organic layers are contained within the pockets. Claims 15 and 16 are new. No new matter has been added. After entry of this amendment, claims 1-16 are pending. Figures 1-4 have been amended to add the label "prior art" to each of the figures. Applicants believe this addresses the raised objections.

Claims 1-14 are pending. Claims 1 and 8 are the only independent claims. Claim 1 is directed to an organic light emitting diode (OLED) display. The display has a photo-resist layer fabricated upon a lower electrode layer. The photo-resist layer has a height of less than or equal to three microns. The photo-resist layer is patterned into a plurality of banks to define pockets upon the lower electrode layer. A plurality of polymer layers are contained within the pockets. The layers are formed by dropping a liquid substance into each of the defined pockets and allowing the substance to dry therein. Claim 8 is directed to a method of fabricating an organic electronic device that includes depositing at least one liquid substance having at least one polymer into pockets defined in a photo-resist having a height less or equal to three microns and allowing the liquid to dry into layers contained within the pockets.

In accordance with the invention, the performance of an OLED can be enhanced by improved uniformity and flatness of the layers, which typically include a hole transport layer and an emissive layer (specification, page 9, lines 1-6, page 17, lines 3-16). Organic material is deposited via liquid drops, e.g., using an inkjet printhead, into pockets, essentially enclosed voids, defined by a photo-resist layer and the liquid is dried to form layers (specification, page 16, lines 14-23). The photo-resist height is such that the effect of differential liquid evaporation, which leads to a pinning of the liquid and results in non-uniform films, is reduced (specification, pages 11-12, Figure 5). The height of the resist is sufficient to prevent any spillage of liquid over the photo-resist (specification, page 9, lines 6-8, Figure 5). The drying of the solution results in a film that has a flat, uniform profile, especially at the edges of the film where the film meets the photo-resist bank (specification, page 12, lines 8-11). The improvement is illustrated in figure 6, which compares film flatness for photo-resists within the claimed range and outside the claimed range.

Claim Rejections under 35 U.S.C. § 102

Prior to this response, claims 1-14 were rejected as anticipated by U.S. Patent Number 6,517,996 ("Chao") or by U.S. Patent Number 6,774,392 ("Humbs") or obvious over certain prior practices described in Applicants' specification. Applicants respectfully disagree.

Chao teaches away from a plurality of layers that are formed by dropping a liquid substance into defined pockets, as claimed. Chao recognizes that inkjet printers may be used to form OLED's by depositing polymer material, but, according to Chao, the technique has technical deficiencies (col. 2, lines 35-47). Chao describes a different technique, in which material is vapor deposited. For example, Chao describes a device having a small molecule hole-transport material, such as N, N'-diphenyl-N,N'-(m-tolyl) benzidine (TPD), and a small molecule electron-transport material, such as tris-(8-hydroxyquinoline) aluminum (Alq_3), which are vapor deposited onto a surface (col. 4, lines 50-54, col. 5, lines 5-8). As a result, Chao teaches away from layer-forming that involves dropping or depositing a liquid substance in favor of a different method utilizing vapor deposition. Further, Chao teaches depositing small-molecule molecule materials, which can be vapor deposited, over depositing polymers, which are typically not vapor deposited. Applicants request that the anticipation rejection is view of Chao be withdrawn.

Nor does Humbs describe Applicants' invention, at least for the reason that Humbs does not describe multiple polymer or organic layers contained within pockets, as claimed. Rather, in Humbs, luminescent layers overflow a resist layer. Referring to figures 3A and 3B, reproduced below for convenience, Humbs describes forming an insulator layer 3 defining rows of openings 31 (Figure 3B, col. 4, lines 42-45, 53-65).

FIG. 3A

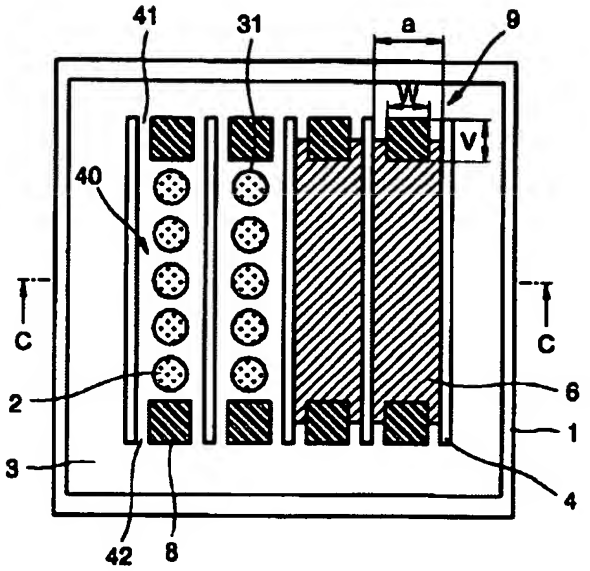
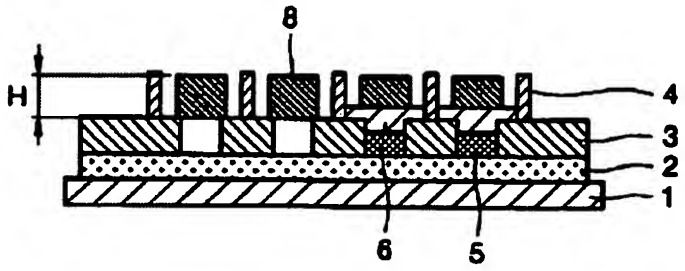


FIG. 3B



Into the holes 31, Humbs delivers two active layers, a hole transport layer 5 and an emission layer 6 (col. 5, lines 5-11). As evident in figure 3B, these layers overflow the pockets

31. Indeed, Humbs provides parallel walls 4 to prevent material 6 from flowing into pockets in adjacent rows.

As a result, Humbs clearly does not disclose layers contained within the pockets, as claimed. Applicants submit that the anticipation rejection in view of Humbs should be withdrawn.

Claim Rejections under 35 U.S.C. § 103

Finally, the office action points to a prior practice described in Applicants' specification relating to photo-resist layers having a height between 3 and 10 microns. The rejection notes that the prior practice utilized a photo-resist height close to the height recited in Applicants' claims, and reasons that the subject matter of the claims is *prima facie* obvious because there is an expectation of similar results for similar ranges, citing *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775 (Fed. Cir. 1985). But, this case is not on point and the reasoning in the rejection is wrong. In *Titanium Metals*, the obviousness analysis is in the context of a claim to a composition of matter, a particular alloy. *Id.* at 776. In such context, the existence in the prior art of a similar composition may be sufficient for a *prima facie* case of obviousness, absent evidence to the contrary, because of the expectation of a person of ordinary skill in the art that similar compositions have similar properties, which would provide motivation to make the composition. *See In re Dillion*, 919 F.2d 688 (Fed. Cir. 1990).

In the present application, the claims are of course directed to an OLED display and a method of making an organic electronic device including a pocket in a photo-resist layer of defined height, which can yield improved devices because the uniformity of layers formed in the pocket is improved. For obviousness, it is not sufficient that the art could be modified, the prior art must suggest the desirability of the modification. *In re Laskowski*, 871 F.2d 115 (Fed. Cir. 1989). For example, in *Monarch Knitting Machinery Corp. v. Sulzer Morat GmbH*, 159 F.3d 977 (Fed. Cir. 1998), the invention involved the height of a stem segment of a needle for a knitting machine, which the Patentee discovered solved a needle breakage problem. *Id.* at 879. In considering prior art disclosing similar stem segment heights, the court warned that, for obviousness, there must be a motivation to modify the prior art, and looked to whether the prior art recognized the relationship between stem segment height and breakage:

Stated otherwise, what would have impelled one of ordinary skill to recognize a relationship between stem segment height and the hook breakage problem? If those of ordinary skill would have recognized a relationship, then, and only then, does the trial court proceed to examiner whether the prior art in fact contains a coherent teaching about that relationship. Thus, before proceeding to find a trend, the trial court must discern whether one of ordinary skill would have had a motivation to combine references to form a trend. *Id.* at 882.

Here, the art failed to recognize the relationship between photo-resist height and layer uniformity and there was no motivation to modify the prior practice relied upon in the rejection to make Applicants' inventions.

Applicants respectfully request that the rejections be withdrawn and claims be allowed.

All other claims depend on claim 1 or claim 8, which Applicants have demonstrated to be allowable over Chao, Humbs and the prior practice described in Applicants' specification. These dependent claims are allowable at least for the reasons discussed above.

New Claims

Claims 15-16 are new. No new matter has been added.

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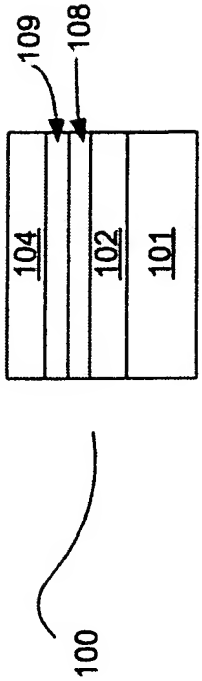

PRIOR ART

FIG. 1

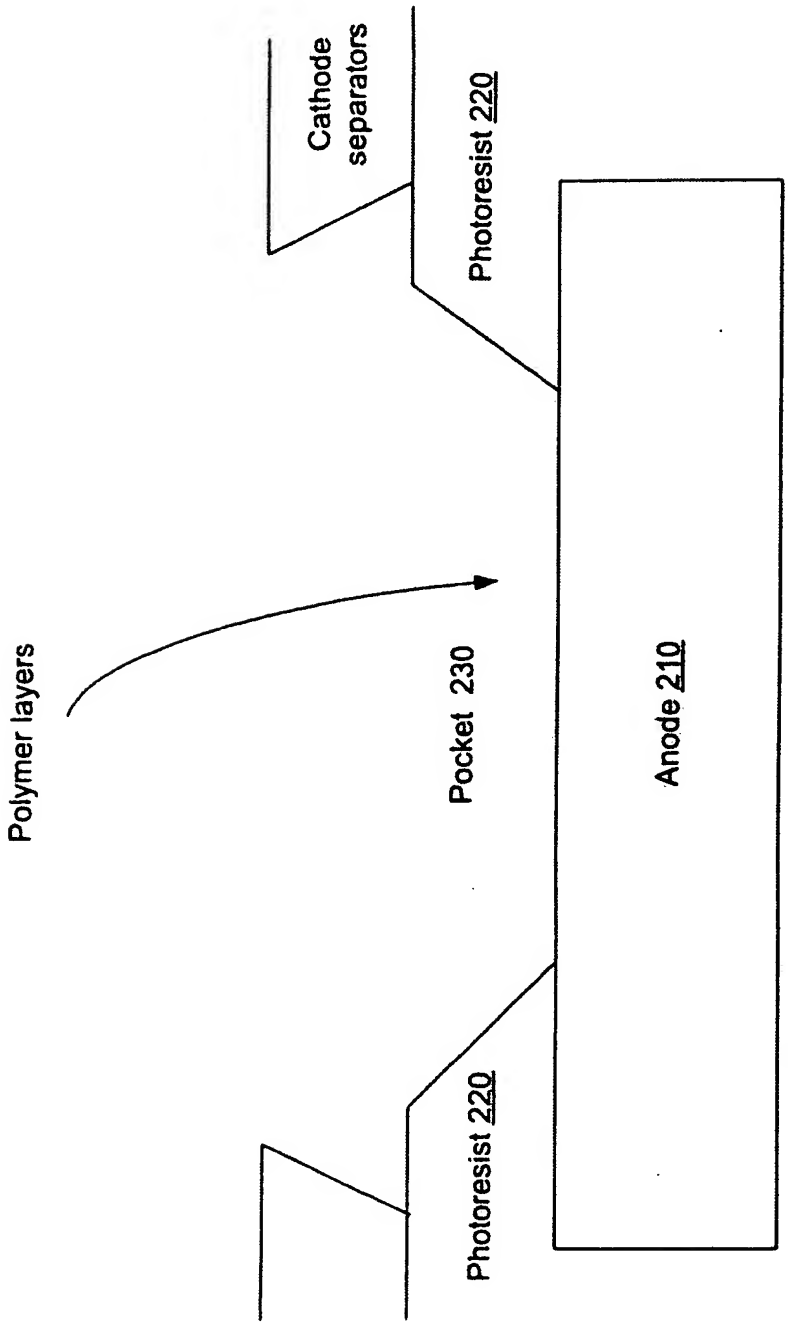

FIG. 2 PRIOR ART

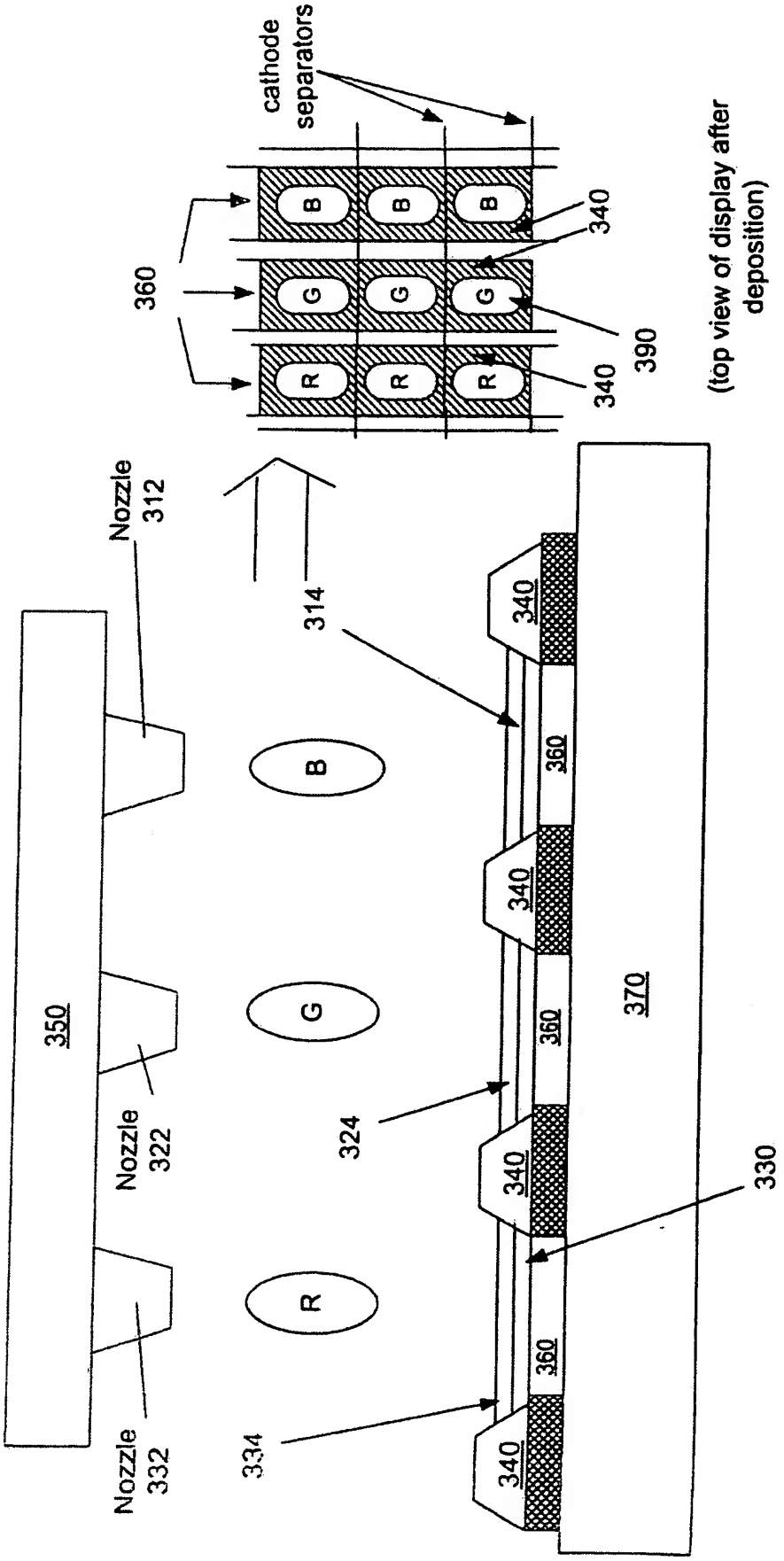

FIG. 3 PRIOR ART

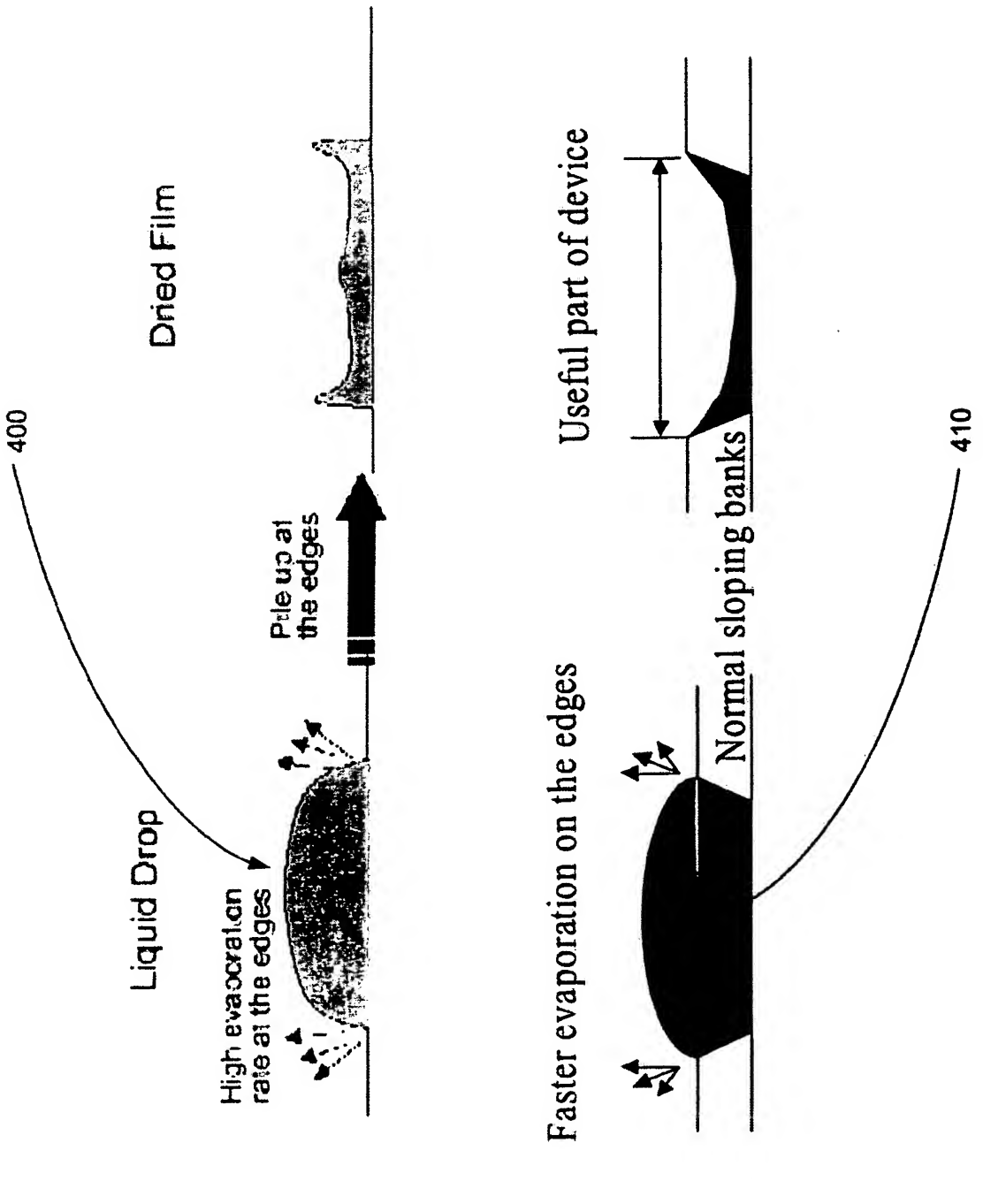

FIG. 4

PRIOR ART